

Appln. No. 10/711,685  
Docket No. PES-D-03-025/PES-0220

### REMARKS / ARGUMENTS

#### Regarding Extension of Time

Provided herewith is a request for a one month extension of time under 37 CFR 1.136(a), which extends the time of this reply from September 14, 2007, to October 14, 2007. The Commissioner is hereby authorized to charge the necessary extension of time fee to Deposit Account No. 06-1130. Applicant claims Small Entity Status.

#### Regarding Additional Claims

Applicant has added two additional dependent claims, bringing the claim count to 26 total with 4 independent. Applicant has previously paid for 25 total claims and 4 independent claims. The Commissioner is hereby authorized to charge Deposit Account No. 06-1130 the requisite amount for entry of the one additional dependent claim. Applicant claims Small Entity Status.

#### Status of Claims

Claims 1-23 and 26 are pending in the application and stand rejected.

Applicant has provided herein clarifying remarks distinguishing Claims 1-23 and 26 over the prior art, and has added new Claims 27-28, leaving Claims 1-23 and 26-28 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §103(a) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

#### Rejections Under 35 U.S.C. §103(a)

Claims 1-3, 8-13, 17-23 and 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Spear (U.S. Patent No. 6,051,331, hereinafter Spear) in view of Lehman (U.S. Patent No. 5,879,826, hereinafter Lehman).

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Claims 4-5, and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Spear in view of Lehman as applied to Claims 1 and 13, and further in view of Wilson (U.S. Publication No. 2004/0197630, hereinafter Wilson).

Claims 6-7 and 15-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Spear modified by Lehman as applied to Claims 4, 5 and 14 and further in view of Toshihiro (JP 05-251097, hereinafter Toshihiro).

Applicant traverses these rejections for the following reasons.

Applicant respectfully submits that the obviousness rejection based on the References is improper as the References fail to teach or suggest each and every element of the instant invention in such a manner as to perform as the claimed invention performs. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Pine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

Independent Claims 1, 13, 20 and 26, each include limitations directed to the layers of the bipolar plate being *metallurgically bonded* together, and *the metallurgical bond* extending *partially* around channels, an inlet port and an outlet port.

Dependent claims inherit all of the limitations of the respective parent claim and any intervening claim.

In rejecting independent Claims 1, 13, 20 and 26, the Examiner applies only the combination of Spear and Lehman, acknowledging that Spear does not disclose the specifics of the bond line of the metallic seal, and looks to Lehman to cure this deficiency.

Applicant agrees that Wilson and Toshihiro are not applicable against independent Claims 1, 13, 20 and 26.

Applicant agrees that Spear has the deficiencies noted by the Examiner, submits that Spear is not only deficient in disclosing the specifics of the bond line but is also deficient in disclosing a metallic seal (*metallurgical bonding*), and further submits that Lehman is deficient in curing the deficiencies of Spear.

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In comparing Spear with the claimed invention, Applicant finds Spear to disclose and teach a fuel cell having *gaskets* to seal the bipolar plate separator to the EMA, and where no gasket is used, to disclose a platelet with a ridge arranged to interlock with a groove in another platelet, and with *graphite paper* compressively sandwiched inbetween. Col. 11, lines 15-28. Here, Applicant finds Spear to disclose and teach a *non-metallic seal*, and to be wholly deficient in disclosing a bipolar plate having layers *metallurgically bonded* together to produce a *metallic bond line* extending partially around channels, an inlet port and an outlet port.

In applying Lehman against the claimed invention, the Examiner remarks that Lehman teaches a bipolar plate with a gasket seal, referencing Figure 4 of Lehman. Paper No. 20070530, page 4.

In comparing Lehman with the claimed invention, Applicant finds Lehman to disclose a fuel cell having an air frame 30 having an *O-ring* 173 to provide sealing between adjacent components. Applicant further finds Lehman to teach *many O-rings* to provide sealing (see elements 71, 73, 74, 173, 271, 272, 372, 671, for example). Col. 9, line 60 through col. 12, line 67. Here, Applicant finds Lehman to disclose and teach a *non-metallic seal*, and to be wholly deficient in disclosing a bipolar plate having layers *metallurgically bonded* together to produce a *metallic bond line* extending partially around channels, an inlet port and an outlet port.

Since neither Spear or Lehman disclose or teach a bipolar plate having layers *metallurgically bonded* together to produce a *metallic bond line* extending partially around channels, an inlet port and an outlet port, Applicant submits that the combination falls wholly short in disclosing, teaching or suggesting each and every element of the claimed invention arranged so as to perform as the claimed invention performs.

With regard to performance, Applicant notes that both Spear and Lehman are both directed to fuel cells, and not to electrochemical cells that can operate as either a fuel cell or an electrolysis cell, as discussed in the instant application at paragraph [0021]. As further discussed at paragraph [0021] of the application, the subject invention is suitable

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for use in an electrochemical cell operating at pressures up to or exceeding 100 psi, up to or exceeding 500 psi, up to or exceeding 2500 psi, or even up to or exceeding 10,000 psi.

In order to sustain the noted high operating pressures and maintain a high degree of structural integrity and performance efficiency, leakage prevention between bipolar plate layers is needed, which may be accomplished by increased clamping, or by the teaching of the claimed invention. While Applicant agrees that Spear and Lehman may be suitable for their intended purpose (fuel cells operating at 10-65 psi for example, see Lehman col. 2, line 27), there is no disclosure in either Spear or Lehman to suggest modifying their *non-metallic bonds* for a *metallic bond (as claimed)* to improve any performance characteristic so that their particular fuel cell can operate at a pressure exceeding 500 psi or even 100 psi. As such, Applicant submits that the teaching of Spear and Lehman lack any teaching, suggestion or motivation to do what Applicant has done.

In view of the foregoing, Applicant submits that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done, fail to recognize a problem recognized and solved only by the present invention, fail to offer any reasonable expectation of success in combining the References to perform as the claimed invention performs, and discloses a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicant considers to be traversed.

#### **Regarding New Claims 27-28**

Applicant has added new Claims 27-28 to capture originally disclosed but unclaimed subject matter. No new matter has been added as antecedent support can be found in the application as originally filed such as at paragraph [0021] for example. In view of Applicant's remarks set forth above regarding the lack of a teaching, suggestion or motivation to arrive at the claimed invention, particularly with respect to the structural

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integrity of the electrochemical cell at high operating pressures, Applicant submits that new Claims 27-28 are distinguishable over the prior art of record and are therefore allowable, and respectfully requests notice thereof.

If a communication with Applicant's Attorneys would assist in advancing this case to allowance, the Examiner is cordially invited to contact the undersigned so that any such issues may be promptly resolved.

The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 06-1130. In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above-identified Deposit Account.

Respectfully submitted,

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